Graphics Verification October Results

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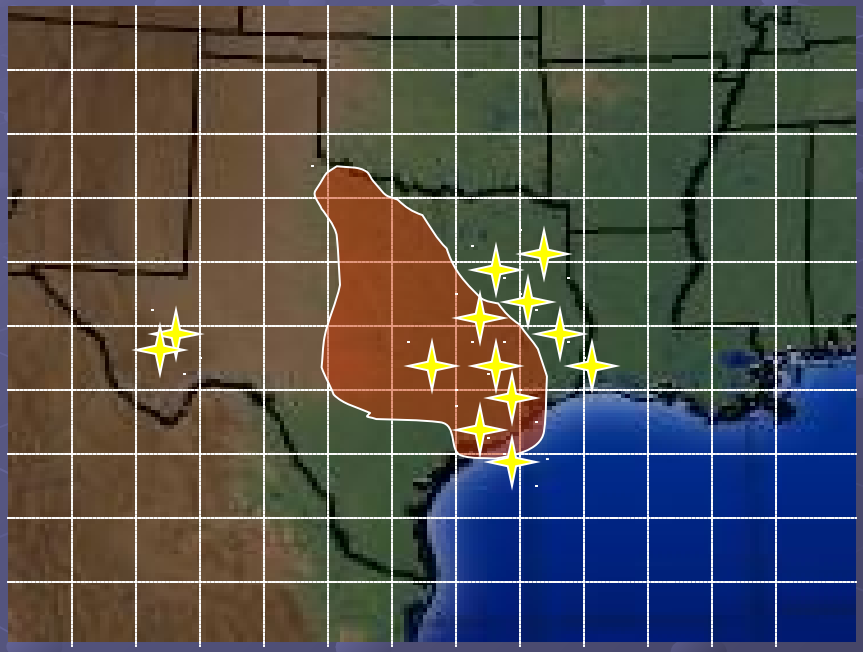
Measures Used

2 x 2 Contingency Table

Observations \ Forecasts	Yes	No	
Yes	A	B	C = A +B
No	D	E	F = D + E
	G = A + D	H = B + E	I = C + F

- **Chi-Square** – used to test for statistical significance. Answers the question, “Do we have a large enough sample to know our results are conclusive?”.
- **Heidke Skill Score** – used to test whether we are beating persistence or climatology.
- **Bias** – used to determine whether we are over-forecasting or under-forecasting.

Grid Verification



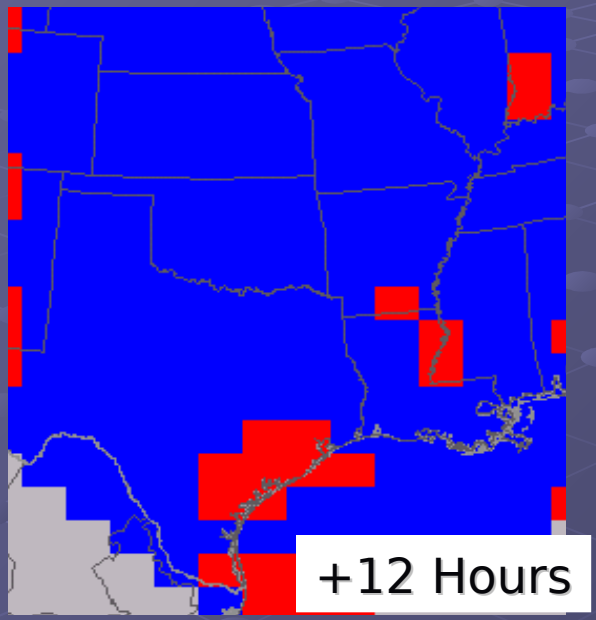
- Region is divided into equally spaced grids.
- Contingency table results are computed at each grid.
- Ideal for systematic and one-dimensional forecasts (HWD & thunderstorms

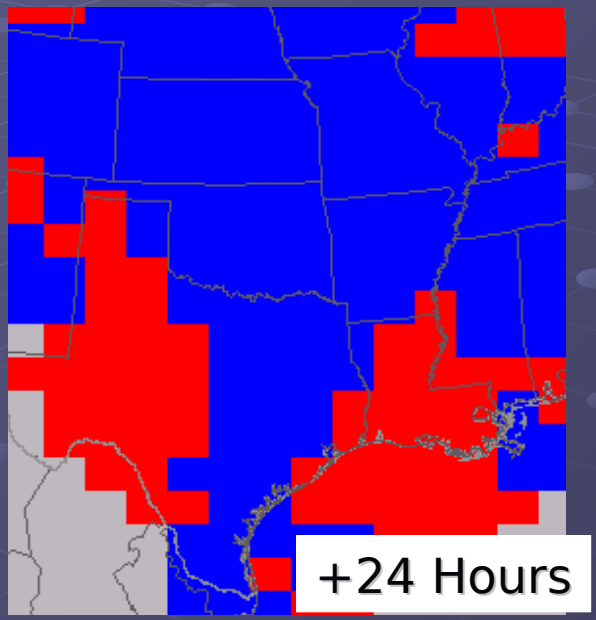
HWD Results

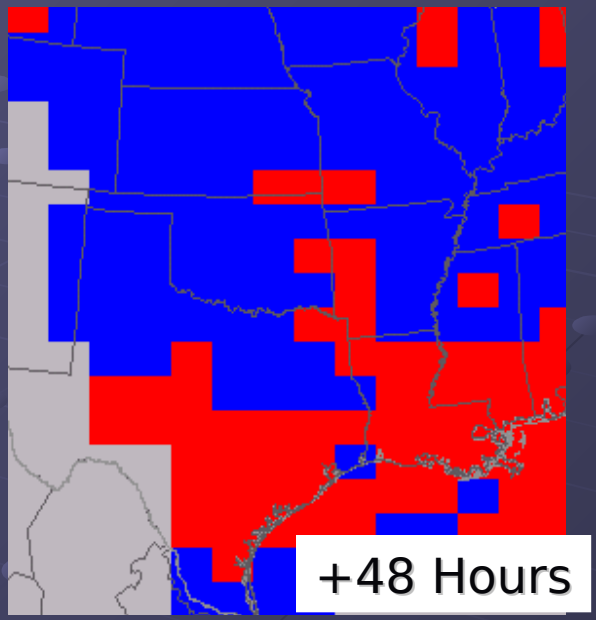
Period: 01-31 Oct 02

Chi-Square Distribution – HWD

Period: 01-31 Oct 02





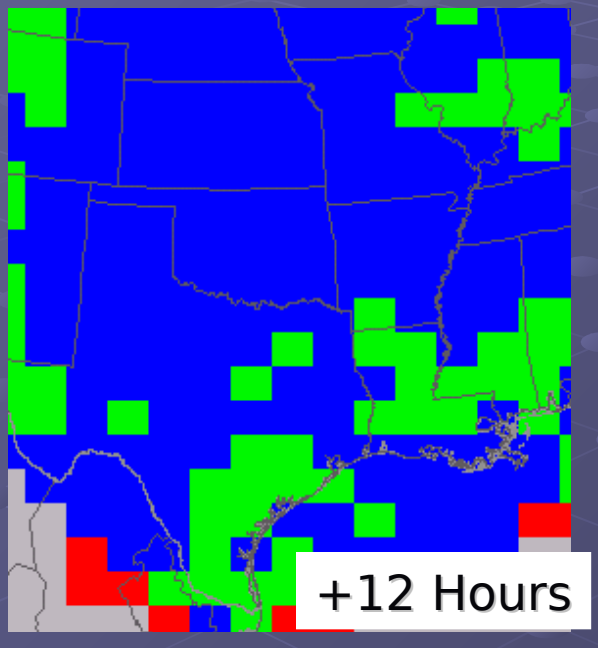


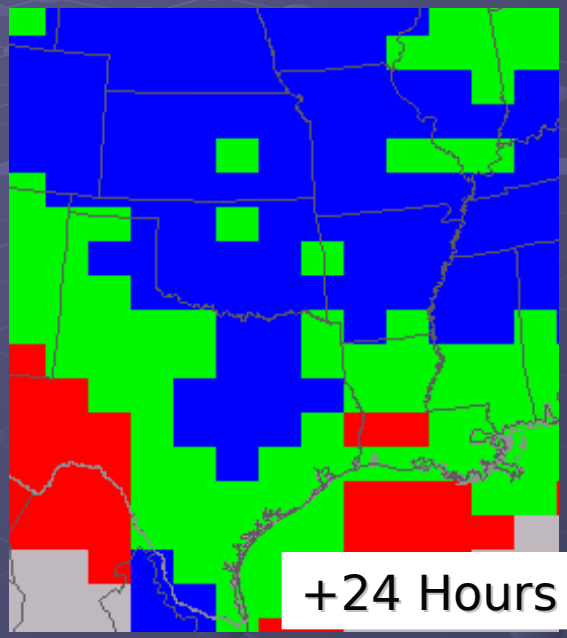
Hypothesis: Are forecasts related in a meaningful way to corresponding observations?

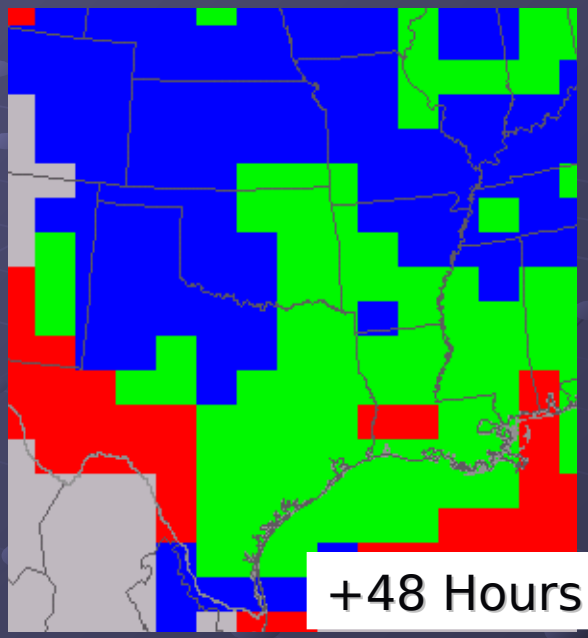
- Yes (p<.05)
- No (p>.05)
- Insufficient Data

Forecast Skill – HWD

Period: 01-31 Oct 02







Strong Skill (hss>.5)

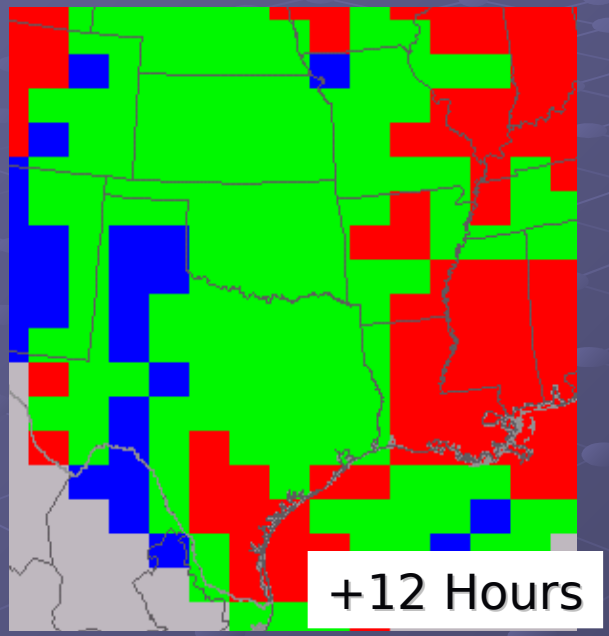
Weak to Moderate Skill (0<hss<.5)

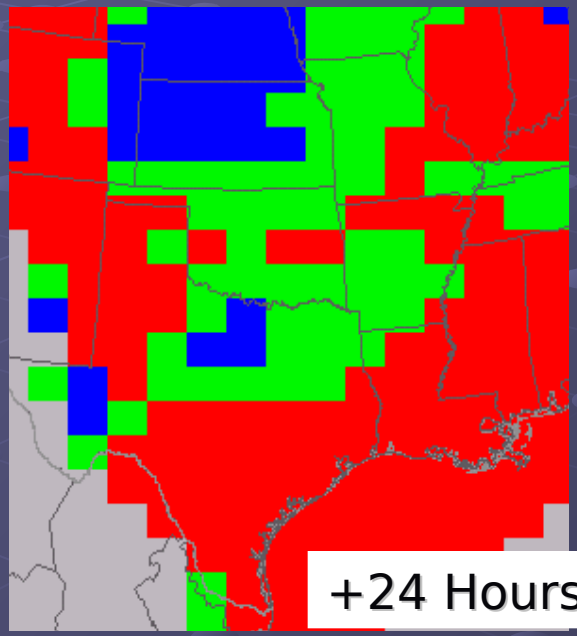
No Skill (hss< 0)

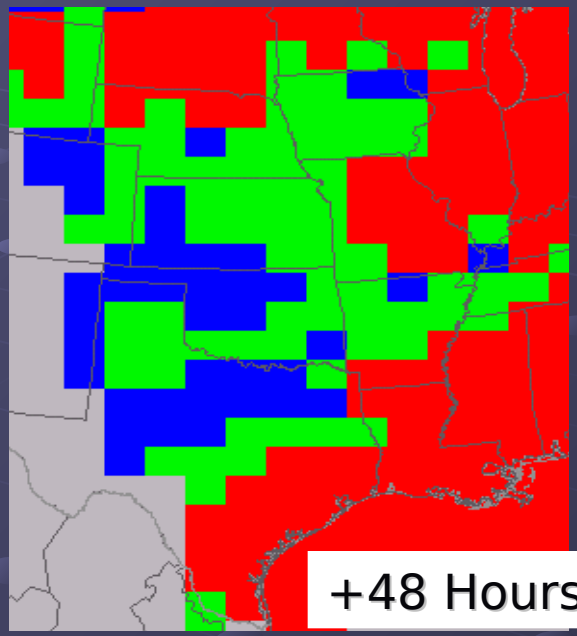
Insufficient Data

Bias – HWD

Period: 01-31 Oct 02







Over-Forecast (bias>1.2)

No Significant Bias (.8<bias<1.2)

Under-Forecast (bias< .8)

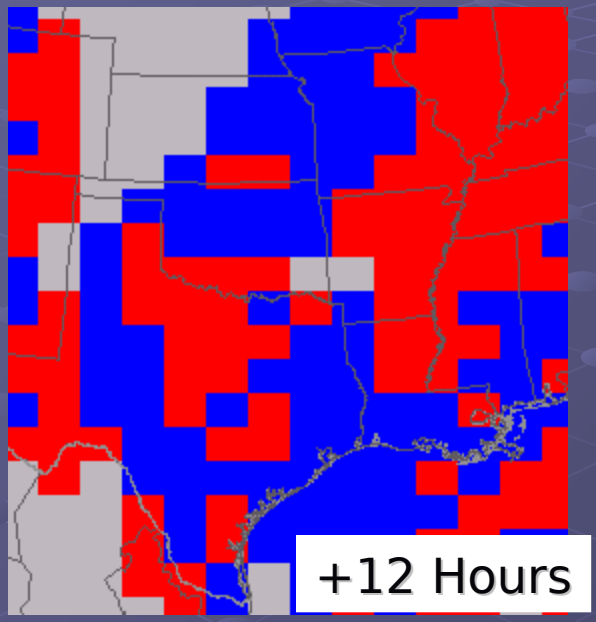
Insufficient Data

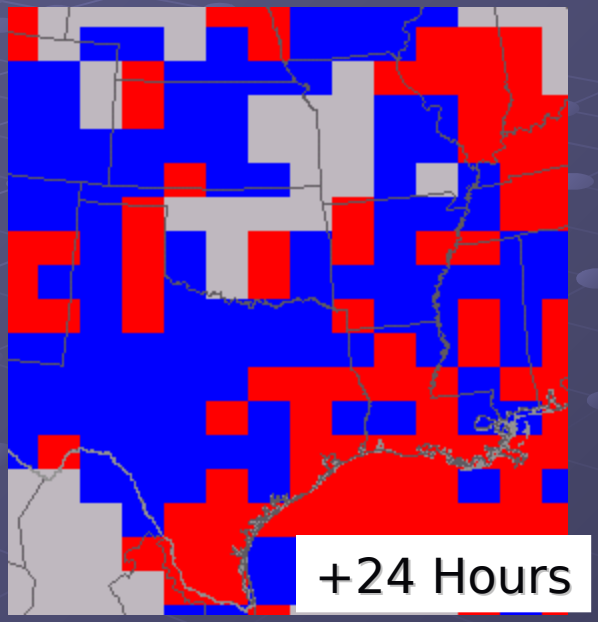
Thunderstorm Results

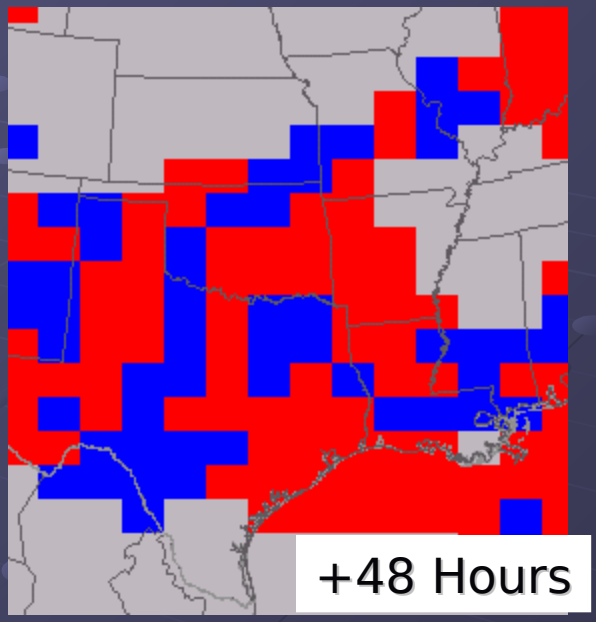
Period: 01-31 Oct 02

Chi-Square Distribution – Thunderstorms

Period: 01-31 Oct 02







Hypothesis: Are forecasts related in a meaningful way to corresponding observations?

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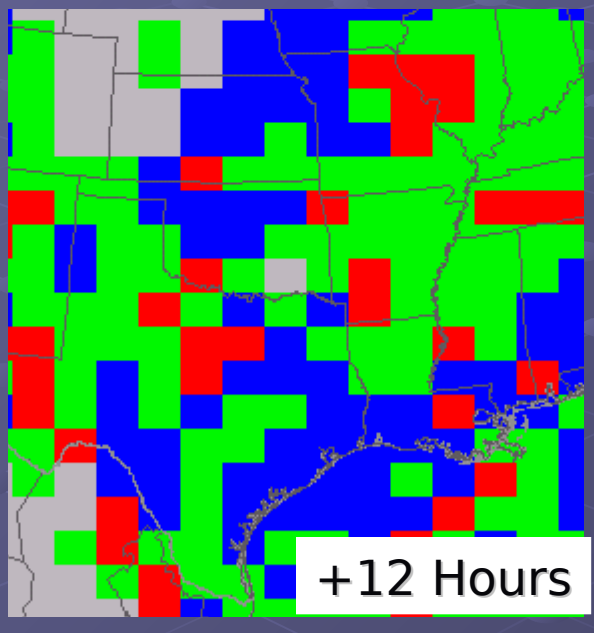
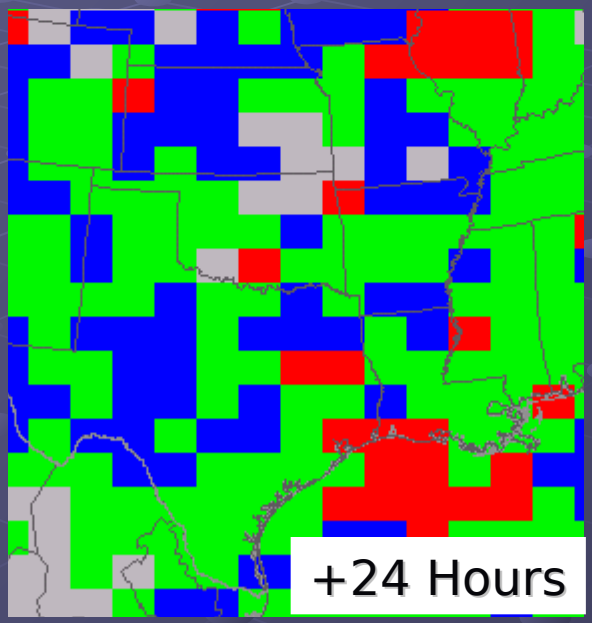
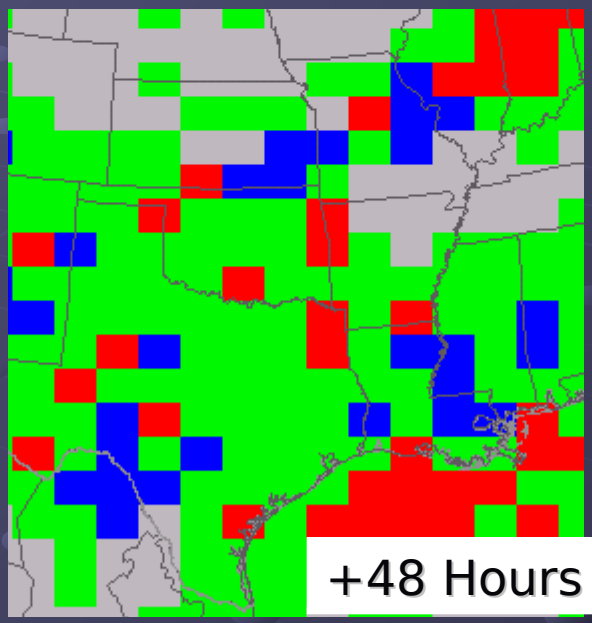
Slide reflects the more sporadic nature of thunderstorm activity in October compared to HWD.

Forecast Skill – Thunderstorms

Period: 01-31 Oct 02







Strong Skill (hss>.5)

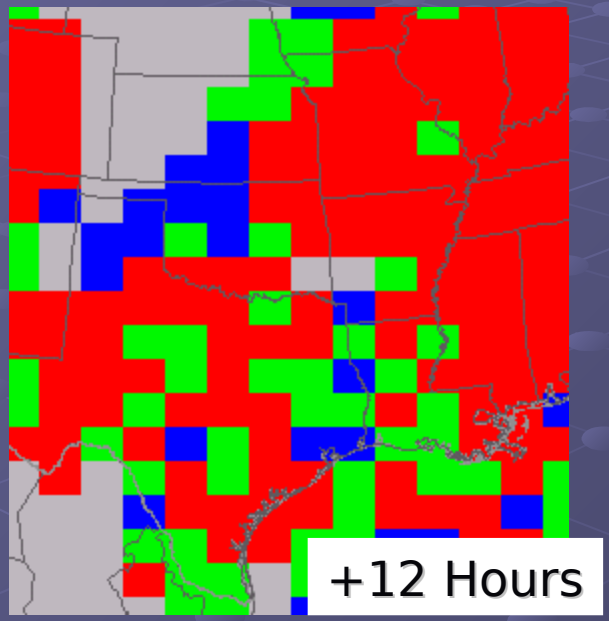
Weak to Moderate Skill (0<hss<.5)

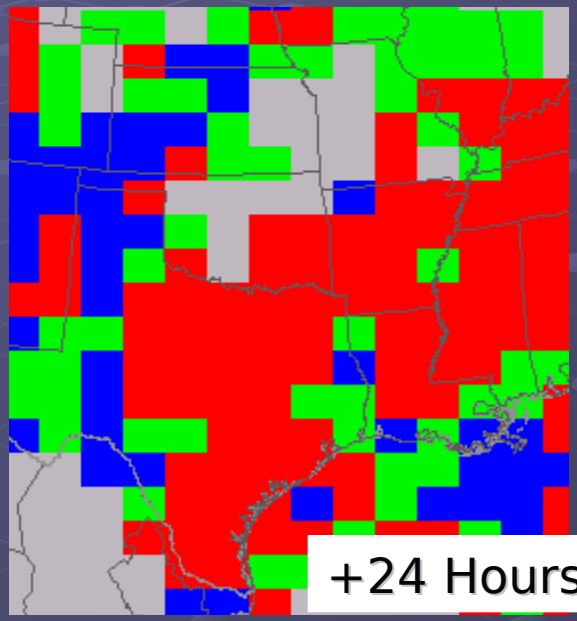
No Skill (hss< 0)

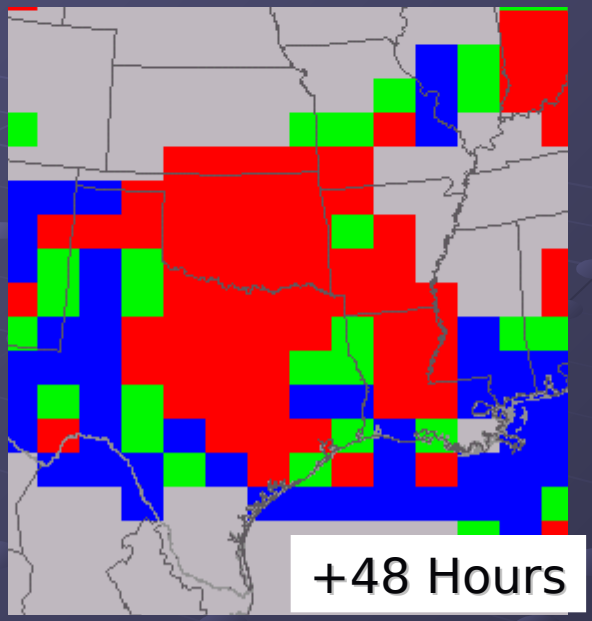
Insufficient Data

Bias – Thunderstorms

Period: 01-31 Oct 02







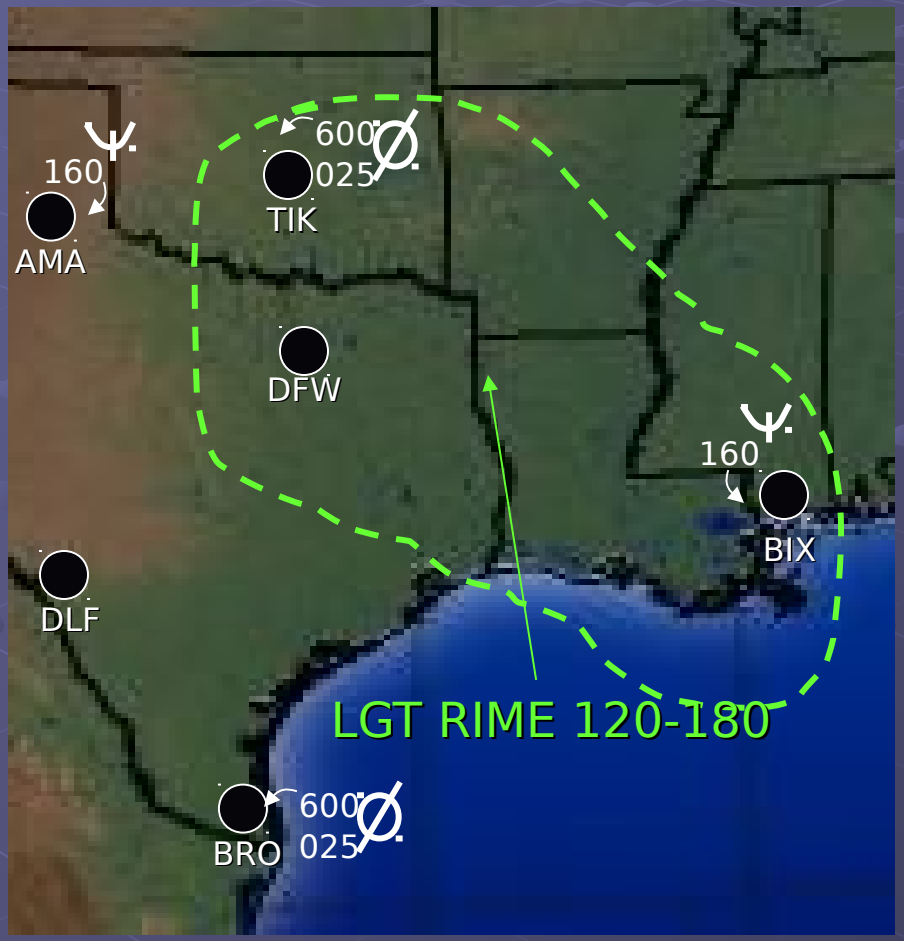
Over-Forecast (bias>1.2)

No Significant Bias (.8<bias<1.2)

Under-Forecast (bias< .8)

Insufficient Data

Next Phase - Point Verification of TURBC & ICG



- Points (airfields, etc.) are selected to provide a cross-sample of the region.
- Contingency table measures are calculated at the points, not everywhere as in the grid method.
- A circle (r=60nm) is placed around the verification site; hits or misses are determined inside this area.
- Quality Assurance person has to manually accept or reject observations.
- Method is the only realistic way to process non-systematic and multi-dimensional PIREPS.